CLAIMS

What is claimed is:

1. A method for reducing the bit error rate during reception and processing of a received signal comprising:

receiving, at a receiver, a signal from a remote location;

analyzing the received signal to determine one or more signal characteristics of the received signal;

performing a look-up in a look-up table based on the one or more signal characteristics to determine an optimal slice point;

retrieving optimal slice point data from the look-up;

providing the optimal slice point data to a decision device that is part of the receiver to establish the optimal slice point as the decision device slice point; and

processing the received signal with the decision device utilizing the optimal slice point.

2. The method of Claim 1, wherein the one or more signal characteristics comprise a signal magnitude characteristic or a signal phase characteristic.

3. The method of Claim 1, wherein the look-up table is generated during prior test routines to determine optimal slice points for a give set of one or more signal characteristics.

4. The method of Claim 1, wherein the slice point comprises one or more threshold values that are utilized by the decision device.

5. The method of Claim 1, wherein the decision device comprises a slicer.

6. The method of Claim 1, wherein the relation between one or more signal characteristics and the optimal slice point is non-linear.

7. A method for quantizing a received signal to two or more discrete values comprising:

monitoring a received signal to determine a peak value and phase value of the received signal;

processing the peak value and phase value of the received signal based on prior testing to determine an optimal slice point;

communicating the optimal slice point to a decision device;

setting the slice point of the decision device to the optimal slice point; and

analyzing the received signal with the decision device by comparing the received signal to the optimal slice point and, based on the comparison, quantizing the received signal to one of two or more discrete values.

8. The method of Claim 7, wherein processing comprises performing a look-up operation in a memory.

9. The method of Claim 7, wherein processing comprises executing one or more equations to determine an optimal slice point.

10. The method of Claim 7, wherein comparing the received signal to the optimal slice point comprises comparing the magnitude of the received signal at a slice time to a threshold value defined by the optimal slice point.

11. The method of Claim 7, wherein the received signal is received over a fiber optic cable.

12. The method of Claim 7, wherein the processing comprises executing machine readable code to compare the peak value and phase value to one or more values in memory to obtain an optimal slice point.

13. A system for setting a slice point of a decision device in a transceiver comprising:

an amplifier configured to modify a received signal's power level and output received signal strength indicator data representing the magnitude of the received signal;

a clock and data recovery module configured to output phase alignment data regarding the received signal;

a memory configured to store test data, the test data comprising optimal slice point data for two or more sets of signal strength indicator data and phase alignment data;

a processor, in communication with the memory, configured to receive and utilize the signal strength indicator data and phase alignment data of the received signal to perform a look-up operation in the test data to determine an optimal slice point setting; and

a decision device, in communication with the processor, configured to receive the optimal slice point setting and adjust one or more decision device threshold values based on the optimal slice point setting.

14. The system of Claim 13, wherein the amplifier comprises a limiting amplifier.

15. The system of Claim 13, wherein the optimal slice point data comprises at least a voltage threshold value.

16. The system of Claim 13, wherein the test data comprises data that was generated prior to the look-up operation and the test data associates an optimal slice point with received signal strength value and phase alignment value.

17. The system of Claim 13, wherein the relation between the optimal slice point is not linearly related to the received signal strength.

18. A method for controlling operation of one or more transceivers to reduce the bit error rate when processing a received signal comprising:

receiving, at a receiver at a first station, a signal transmitted from a transmitter of a second station;

analyzing the signal to determine one or more signal parameters;

providing the one or more signal parameters to a processor;

comparing the one or more signal parameters to optimal operational parameter data stored in a memory;

responsive to the comparing, selecting one or more optimal operational parameter settings;

transmitting at least one optimal operational parameter setting from the first station to the second station to control at least one aspect of operation of the transmitter at the second station; and

continuing to receive and processing the signal, the signal being transmitted based on the optimal operational parameter settings, wherein the optimal operational parameter settings are selected to reduce the bit error rate during processing of the received signal.

19. The method of Claim 18, further comprising communicating at least one optimal operational parameter setting to the receiver at the second station to control at least one aspect of processing the signal by the receiver at the first station.

20. The method of Claim 18, wherein the signal is transmitted over a fiber optic medium.

21. The method of Claim 18, wherein the operational parameters are selected from the group of operational parameters consisting of slice point voltage magnitude, slice point phase alignment, transmit power, transmit phase, modulation, bias, modulation percentage control, duty cycle control, or input compensation.

22. The method of Claim 18, wherein transmitting utilizes a low frequency channel to communicate between the first station and the second station.

23. The method of Claim 18, wherein transmitting at least one optimal operational parameter setting to the second station comprises transmitting an optimal transmit power level.

24. A method for determining one or more optimal slice point settings and operational parameter settings for communication between a first station and a second station comprising:

providing a communication system having a receiver at a first station and a transmitter at a second station;

initiating a test routine to determine one or more optimal slice points for a decision device located in the receiver of the first station, the test routine comprising:

generating or retrieving from memory test data;

transmitting the test data from the second station to the first station;

monitoring the received signal to determine one or more received signal parameters;

concurrent with transmitting the test data and monitoring the received signal, varying the slice point and monitoring the bit error rate to determine at least one optimal slice point;

recording at least one optimal slice point for one or more permutations of transmit operational parameters and received signal parameters in a memory; and

setting the optimal slice point and optimal transmit operational parameters.

25. The method of Claim 24, further comprising varying one or more transmit operational parameters of the second station.

26. The method of Claim 25, wherein setting the optimal transmit operational parameters comprises transmitting a control signal from the first station to the second station to thereby control the transmit power at the second station.

27. The method of Claim 24, further comprising:

initiating a communication session between the first station and the second station;

receiving a signal from the second station;

analyzing the signal to determine one or more received signal parameters;

performing a look-up operation in the memory to obtain an optimal slice point for the determined one or more received signal parameters;

communicating the optimal slice point to a decision device; and

processing the received signal utilizing the optimal slice point for future processing by the decision device.

28. The method of Claim 24, wherein the test routine is performed by a processor.

29. The method of Claim 24, wherein the optimal slice point is dependant on a magnitude of the received signal and the one or more permutations of transmit operational parameters include varying the transmit power to thereby vary the magnitude of the received signal.

30. The method of Claim 24, wherein the slice point is defined by a time value, a threshold voltage value, and a phase value.

31. The method of Claim 24, wherein setting the optimal transmit operational parameters comprises transmitting a control signal from the first station to the second station to thereby control the transmit power at the second station.

32. A system for evaluating an installed communication link and establishing a optimal slice point based on the evaluation of the installed communication link comprising:

a first station comprising:

a driver circuit configured to establish a transmit power level based on a power level control signal;

a first station processor configured to communication with a second station and the driver circuit to thereby provide a power level control signal to the driver circuit;

a second station comprising:

a signal magnitude detector configured to generate data regarding a magnitude level of a received signal;

a decision device configured to quantize a received signal to one of two or more discrete values based on a slice point;

a memory configured to store machine readable code;

a second station processor configured to communicate with the first station, the decision device; and the signal peak detector to control a slice point of the decision device and the transmit power level at the first station, and further configured to:

execute the machine readable code stored in the memory, the machine readable code configured to initiate a test routine that generates test data defining optimal slice points.

33. The system of Claim 32, wherein the test data is generated by monitoring the error rate of the received signal during processing while varying the transmit power level and the slice point.

34. The system of Claim 32, wherein the driver circuit is configured to drive a light emitting device.

35. The system of Claim 32, wherein the machine readable code is further configured to set the optimal slice point of the decision device based on the test data to thereby minimize the error rate when processing a received signal.

36. The system of Claim 32, wherein the second station processor monitors the error rate of a received signal and based on the monitoring alters the slice point of the decision device to reduce the error rate.

37. The system of Claim 32, wherein the slice point is non-linearly related to the transmit power.